APPLYING PRiSM METHODOLOGY IN THE CANADIAN CONSTRUCTION SECTOR

Study of Benefits, Challenges and Constraints

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ABSTRACT

Construction projects in Canada are one of the largest and most important sectors for the national economy. Given its significant contribution to employment rate and impact on the Gross Domestic Product, it is relevant to ensure the implementation of project management best practices to deliver projects on time, on budget and within scope.

However, in order to have a successful project it is also relevant to include more elements than the ones listed above, and start including as a priority the process by which the product or service is delivered.

Therefore, this paper analyzes how PRiSM (Projects integrating Sustainability Methods), a new project management practice, can help construction projects improve their processes and influence their outcomes.

Specifically, this paper contains an analysis of the Canadian construction sector, a description of the sustainability project management and the study of how PRiSM, a sustainability methodology, can be applied in the project management of construction projects.

The sources consulted were online sources such as papers, books and guidelines; and an interview with President and Founder of Green Project Management (GPM Global) and co-author of PRiSM concepts and guidelines.

INTRODUCTION

Project management within construction companies is the method by which projects are conducted. However, even when project managers and team members strive to the fullest to deliver on time, on budget and encompassing all requirements with good quality standards, there are still challenges to overcome. The question is, how construction projects can overcome these constraints in order to be successful?

Currently, different trends of project management have risen to help projects enhance their performance and sustainability project management is one of them. For the purpose of this paper, the focus will be on how a new sustainability project management methodology called PRiSM can help construction projects, its challenges and constraints.
LIMITATIONS

- The availability of public information about case studies from companies implementing PRiSM methodologies hindered the research process.
- Restricted access to PRiSM guidelines and templates.

CONSTRUCTION CHARACTERISTICS AND PROJECTS ANALYSIS OVERVIEW

According to the Construction Extension of the PMBOK® Guide, construction projects are “unique temporary endeavours undertaken to produce a facility to make a product or provide a service”. They are categorized as building construction, infrastructure construction, industrial construction and special-purpose projects (Construction Field, 2013).

Moreover, the Canada Year Book 2011, states that the construction sector is a major industry in Canada improving the employment in 4.9% during 2010 which is 3.5% more than all industries. Furthermore, the Canada Year Book 2012 stated that from 2010 and 2011 the construction sector employed 2.2% more that all industries making it the fifth-largest employer from all industries.

Additionally, the Canada Year Book 2011 stated that the construction sector is an important contributor to the economy accounting 6.0% to the Gross Domestic Product (GDP). In fact, the construction sector exceeded the Canadian overall employment growth and outcomes during 2011 (Government of Canada, 2013).

The construction sector grew 4.2% from 2010 to 2012 while Canada’s overall GDP grew 2.6%.

CHALLENGES IN THE PROJECT MANAGEMENT OF CANADIAN CONSTRUCTION PROJECTS

Denise M. Guérin from Brandeis University, affirmed that construction projects tend to be over-budget, behind the schedule, out of scope and lack of communication protocols. Additionally, Amalraj, Hernani, Ladouceur and Verma acknowledge the presence of budget challenges and also considered contracting, unions and impacted community as challenges in Canadian construction projects.

More specifically, Amalraj, Hernani, Ladouceur, & Verma state that over-budgeted projects in some cases started with misinformation of numbers in order to get the final approval, causing difficulties in subsequent stages. Furthermore, they considered contracting as a major challenge for keeping the project on budget due to the lack of competitive contractors and the scarce labour resources. Unions or labour agreements,
on the other hand, threaten construction projects by restricting the employee recruitment to specific areas because they may not have the necessary skills and competences to complete tasks. Scheduling can also have impact on project management due to the mentioned lack of skilled contractor’s staff and enough quantity of team members to supply planners and schedulers in big projects. Last but not least, the impacted community also represent a challenge depending the type of construction project and the acceptance from people which could help to move forward or halt the construction project.

SUSTAINABILITY IN PROJECT MANAGEMENT

Sustainability in project management and its importance

Sustainability in Project Management is about preserving natural resources, positively impacting the society and strengthening the global economy (Carboni, Gonzalez, & Hodgkinson, PRiSM). Additionally, the Project Management Institute states that sustainability in project management is a new global model of making business and managing a project to incorporate sustainability in every phase.

It is important because organizations now understand the benefits of implementing disciplined project management practices and that by integrating sustainability in the process would bring additional financial, environmental and social benefits than in a waterfall project.

For instance, large companies around the world such as Group L’Oreal (cosmetics), Fujitsu (IT) and Herman Miller (furniture) integrated sustainability in the core of the business and projects. For instance, in 2011 Group L’Oreal was able to get 40% of their materials from renewable resources by following a new procurement strategy. (Project Management Institute, 2011). Additionally, L’Oreal focused on reducing their environmental impact and providing support to communities by implementing sustainability standards enforced through their project portfolio.

On the other hand, Fujitsu defined specific criteria and metrics about environmental impact, resources needed and the carbon footprint as part of the project plan to decide whether or not to move forward with a project (Project Management Institute, 2011).

In contrast, Herman Miller included sustainability goals in their projects in such a way that if the project could not meet these goals, it would be shut down. (Project Management Institute, 2011).
PRiSM™ Methodology

PRiSM is a sustainability project management methodology that integrates five elements to provide a full perspective of a project for its complete management.

According to Joel Carboni, President and Founder of Green Project Management (GPM Global) and co-author of PRiSM concepts and guidelines, the methodology raised due to a concern about how processes within a project were undertaken. He stated that not all green projects were completely environmentally responsible because they were only focused on the final product and not about what it took to deliver that product.

Traditional sustainability project management only focuses on the elements from the triple bottom line (environment, community, finance) to develop projects. However, members from the Green Project Management (GPM) considered that more elements should be included for integrating projects with the core corporate strategy. For that reason, they developed PRiSM methodology including five elements (People, Planet, Profit, Product, and Process) as a new bottom line.

Therefore, Projects integrating Sustainable Methods (PRiSM) integrates the traditional project phases with sustainability by incorporating activities from ISO standards such as ISO-9001 (Quality Management), ISO-14001 (Environmental Management) and ISO-50001 (Energy Management Standard). Additionally, it integrates ISO Guidelines like ISO-26000 (Corporate Social Responsibility) and ISO-21500 (Guidance on Project Management) to obtain more environmental and social benefits.

PRiSM METHODOLOGY FEATURES APPLIED IN THE PROJECT MANAGEMENT OF THE CONSTRUCTION SECTOR AND ITS BENEFITS

As it was mentioned above, the PRiSM methodology includes sustainability practices. Those practices can be applied in the construction sector in order to improve the project’s processes and consequently obtain more environmental and social benefits.

The following features are ways of implementing PRiSM methodology with project management.

1. Include social and environmental project objectives

Including social and environmental objectives in the project is a way to improve the project management process. This means to include project objectives related to transport, energy, wastes and water management as well as decent labour practices, human rights principles and ethical behaviour. Therefore, a company can apply the new bottom line principles from the beginning of the project through all the project life-cycle.
The following figure details the dimensions in which the objectives can be defined:

Source: The P5 Standard 1.0

Therefore, a construction company can now position their project objectives’ in these five areas. Furthermore, difficulties with unions, impacted community, communication protocols and budgets can be mitigated by including sustainable objectives in construction projects in a sense that relationships with stakeholders (internal and external to the project) could be a priority from the beginning of the endeavour and all practices and phases should ensure a good relationship with them to keep the project on-time and therefore, on-budget.

2. Define a Sustainability Management Plan (SMP)

The Sustainability Management Plan is a document containing information about how the project will implement PRiSM methods. It is developed to define the plan, monitor benefits and ensure the alignment of the project with the core strategy of the organization. With a Sustainability Management Plan, organizations can measure the 5 bottom line elements (P5) to get a full perspective of a project.

The SMP should contain its purpose, an executive summary, the sustainability objectives, the qualitative and quantitative performance indicators, the environmental impact assessment, exclusions if applicable, the sustainability risk management, the methodology to undertake reviews/audits and the sustainability metrics template (GPM Global).

By defining and implementing a SMP in a construction project, the endeavour will acquire a full perspective in order to develop a more sustainable outcome. For instance, a project focused on building a bridge following a SMP will be more likely to integrate the best labour practices, promote social inclusion, foster local economy, optimize...
waste and energy management and calculate its CO₂ footprint than a project that only focuses on delivering on time and within budget.

Besides, by defining a SMP, projects can detail the appropriate implementation of PRiSM practices. In that sense, project managers and team members could have access to a guide that explains how to implement these practices in all processes of the project. Consequently, the probability of having difficulties with unions, communities and other stakeholders of interest will be reduced, keeping the project on time and within budget.

3. Undertake an Impact Analysis

An impact analysis is a technique for mapping the project’s deliverables to measure the impact in terms of P5 including key performance indicators for each of these terms. This impact analysis goes beyond the traditional analysis because it analyzes the final deliverable from the very beginning to the very end in five dimensions (Carboni, Gonzalez, & Hodgkinson, PRiSM).

Currently, construction projects in Canada identify impacts related to constraints in time, cost, environmental, social, risk and stakeholder aspects of the final product and related activities. However, with PRiSM methodology, projects can develop impact analysis for the internal management process. More specifically, PRiSM templates provide guidelines to perform an assessment and recommend the evaluation of social aspects such as equality and diversity, environmental sustainability and risk management, for both the product and the process, as being best practices to implement before the project is submitted for approval. For instance, a project aimed to build a school would traditionally develop an impact analysis for the final product and unexpected situations while an impact analysis integrating P5 could also consider human rights, people involved in the process like administrative staff or carpenters and the environmental impact caused during the process like the waste management (recycling and disposition) of implemented materials.

Moreover, by including P5 elements in the impact analysis, the likelihood of having over-costs is reduced because further aspects are covered and so, more back up plans can be generated to mitigate potential threats. At the same time, the probability of having delays may be reduced by taking the necessary measures to prevent actions.

4. Design and implement a Green Vendor Scorecard

A Green Vendor Scorecard is an assessment carried out to evaluate vendors according to previously defined criteria within a company (Carboni, Gonzalez, & Hodgkinson, PRiSM). It includes criteria intended to evaluate whether a contractor can meet internal environmental policies of a certain company or not. More precisely, it can include quantitative environmental criteria such as pollutant cost/effects and amount of recycled materials in their products. Additionally, it can include qualitative environmental criteria such as environment competencies, environment management systems and green image.
The following figure presents an example of how vendors can be scored with a Green Vendor Scorecard:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rating Score</th>
<th>Rating Score</th>
<th>Rating Score</th>
<th>Rating Score</th>
<th>Rating Score</th>
<th>Rating Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of recycled materials in their products</td>
<td>1</td>
<td>0.3</td>
<td>1</td>
<td>0.6</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>Products can be recycled</td>
<td>3</td>
<td>0.8</td>
<td>2</td>
<td>0.6</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Products are energy efficient</td>
<td>2</td>
<td>0.8</td>
<td>2</td>
<td>0.6</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Products harmful to the environment</td>
<td>2</td>
<td>0.8</td>
<td>2</td>
<td>0.6</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Has an active environmental management policy</td>
<td>2</td>
<td>0.8</td>
<td>2</td>
<td>0.6</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Customer Service Capabilities</td>
<td>3</td>
<td>0.8</td>
<td>2</td>
<td>0.6</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>2.9</td>
<td>10</td>
<td>2.1</td>
<td>5.6</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Source: The GPM Reference Guide to Sustainability in Project Management Version 1, Figure 40, page 40.

By implementing this assessment in construction projects, a company can evaluate contractors in more detail considering environmental and social criteria to make a more conscious decision. The benefits of carrying it out is to create better visibility over supplier capabilities, undertake a transparent and objective decision making process and lastly to identify vendor improvement opportunities early in the project.

Moreover, construction projects could be assisted in their budget complexities and contracting challenges with the Green Vendor Scorecard because they will have more information about vendors’ capabilities and performance. Knowing as much as possible about its vendors could give the company a bigger picture about issues and help identify more opportunities for reducing costs.

**BENEFITS, CHALLENGES AND CONSTRAINTS OF APPLYING PRiSM METHODOLOGY IN THE CANADIAN CONSTRUCTION SECTOR**

**Benefits**

Implementing PRiSM methodologies can benefit dysfunctional organizations by facilitating them to understand more clearly what the organizations’ goals are and recognize where the company is going. Consequently, not only the project will be more sustainable, but it would also strengthen the whole company’s strategy.

Additionally, by including sustainability objectives and practices from the initiation phase of construction projects and aligning them to the company’s strategy, the project will be more focused and relevant to the executives. Moreover, reports will be more complete and stronger because they would contain more information. Then, the improvement and results could positively impact future projects and team members.

Indirectly, by including PRiSM practices and therefore being more accountable for environmental and social practices, challenges like budget and schedule can be mitigated due to the constant focus on these practices throughout the life-cycle of the project.

On the other hand, construction projects can be benefited by improving their supply chain. Focusing on the process by which resources are delivered, could help a construction organization to have a sustainable supply chain from cradle to grave and ensure that the project management processes provide sustainable deliverables.

“…projects come with the best products or services and supply chains are the starting point of the product…”

Joel Carboni, Co-author of PRiSM
Challenges

Despite the benefits that PRiSM could bring into a project, there are other factors that may represent a challenge. For instance, to introduce a new methodology of project management in a construction company will require more work and effort from the project manager and the team members in order to understand how processes should be undertaken.

Having mentioned before that keeping construction projects on-schedule is one of their challenges, projects starting to implement PRiSM methods may require more time in the planning stage. This is basically because more steps are included in processes and additional elements (P5) should be analyzed and monitored.

Additionally, the company should also have to raise awareness and change their corporate culture towards one more sustainable and sensible to environmental and social aspects. That means an investment for the company in terms of allocating additional budget and time for training staff in PRiSM methodology and sustainable project management.

Constraints

In order for PRiSM to be successful in a project, it is essential to count on the company’s commitment and willingness to support sustainability entirely from the top-down. This may require resources and time to understand what PRiSM offers and have a vision and plan to capitalize the knowledge throughout the project phases and processes.

Moreover, the success of PRiSM methodology will also depend in the core strategy of the company. If the strategy includes social and environmental practices it would be very likely to have a successful project when PRiSM methodology is implemented. But if not, the project will be focusing in aspects in which top executives would not be interested in and so, the project’s added value would be forfeited.

Finally, it is important to take into account whether or not the company is interested in becoming a leader in the sustainability area. It may be or become a company’s driver if they are interested in excelling over other companies.

CONCLUSIONS

After understanding the present Canadian construction sector and its challenges, the incorporation of PRiSM methodology features in construction projects was done. As a result, it can be said that PRiSM can improve project management practices and help to overcome budget, time, stakeholder and contracting challenges. Challenges that now-a-days construction companies suffer and represent relevant economic losses.

PRiSM methodology could also benefit a construction project aligning its objectives to the core strategy of the company, improving its supply chain, and expanding its vision to 5 main elements.
Nonetheless, in order to be successful with PRiSM, executives must be interested and consider it as a priority. A company willing to change a strategy to one more sustainable is more likely to succeed with PRiSM than a company that is only interested in generating profit.

REFERENCES


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Mónica Gutiérrez is a specialist in sustainability and project management with an environmental engineering degree from Universidad de los Andes. She has experience on environmental compliance and assessment, sustainability programs in the supply chain and Corporate Social Responsibility projects. She has worked for companies ranging from oil and gas, food and beverages and health and beauty sectors. Monica currently works as a sustainability consultant for a Big Four consulting firm and is interested in exploring new ways of implementing project management methodologies. She can be contacted at m.gutierrez244@gmail.com.